FY10 Plan for **LHC/USCMS Software and Physics Support**
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Date: 2 Sept. 2009
Relevant Strategic Plans - LHC CMS Strategic Plan (LHCCMS)

USCMS Software and Physics Support Goal -

- Meet the U.S. obligations to International CMS in the area of software framework and offline management. Meet the US-CMS needs for software and computing support for analysis.
- To facilitate the LPC visitors and resident scientists in commissioning the CMS detector, preparing for physics and performing analysis.

USCMS Software and Physics Support Strategy –

- Participate in the regular CMS major software releases. Perform incremental development with frequent internal and external testing and validation. Deliver software on schedule for CMS integration, data taking commissioning activities and service challenges. Provide support for the physics community through tutorials, documentation and direct support.
- Operate a dedicated help desk to provide support for the resident community.

Objectives for FY10

1. Support of CMSSW for the 2009-2010 run. We are continuing to work to address and trouble shoot problems in a timely manner, and integrate those fixes into CMSSW distributions as quickly as possible. In addition there are new feature requests, which grow out of the operational experience we gain in the data taking commissioning activities we participate in. These are also being addressed as quickly as possible.
2. Continue to work on performance and scalability of CMSSW software. Continue to address the memory scaling issues associated with moving to higher core per dye machines, which we know, are being planned in future computing purchases.
3. Continue to operate a full time business hour helpdesk at the LHC Physics Center (LPC)
    a. Provide direct in person support
    b. Monitor and respond to helpdesk tickets and the community support mailing lists
4. Provide dedicated physics support for LPC residents in using CMS analysis code and infrastructure. Provide guidance to those hired by the LPC CMS center to work on physics support. Work on recruiting more manpower through this cannel.
5. Continue the engagement of CD supported personnel in US-CMS LPC physics work and international CMS physics groups.
6. Provide tutorials and documentation for users as needed (roughly quarterly during the final year of preparations).

Activities and Work Definition

Activity = LHC/USCMS Software and Physics Support

- **Activity type:** Service
- **Description:** Support experiment data taking and analysis
- **Timescale:** Continuous
- **Milestones:** -----
- **Metrics:** Respond to problem reports or requests for new features < 1 business day. Track in Savannah or the relevant hypernews.
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Activity = Simulation & Physics Tools/Phys-Enabling Apps & Tools/CMS concurrent programming

- **Activity type:** R&D
- **Description:** Investigate the use of fine grain parallelism solutions such as openMP in CMS's cpu intensive reconstruction applications investigate other solutions if this does not look promising.
- **Timescale:** Start: Oct '09, Complete Sep '10
- **Milestones:** Produce a report by Nov., which identifies the parts of the reconstruction that are amenable to fine grain parallelism and estimates the benefit of pursing a deployment of it. Reevaluate the strategy. This activity is part of a larger proposal funded by a dedicated DOE grant.
- **Metrics:** -----

Priorities: The most important objective is to maintain a release schedule that allows CMS to collect data during 2009 and 2010. The priority of physics support is to maximize the analysis potential of CMS and the local community by training and support of users.

Staffing: The software and support project has reached the level of effort foreseen in the US-CMS Software and Computing project plan. Currently Software and Support relies on effort from the following individuals from the computing division. In addition there is 1.5FTE of effort at U.S. universities supported by the U.S. CMS Project. Note that 0.5FTE from Marc Paterno is funded by a dedicated DOE grant to fund investigation and develop solutions to the multi-core challenge (see the concurrent programming activity above). Some of those funds must also pay for travel, as this is a project that is being done in cooperation with Atlas and CERN.

- David Dagenhart (1.0FTE)
- Chris Jones (1.0FTE)
- Sudir Malik (1.0FTE) (Guest Scientist)
- Charles Plager (0.5FTE) (Guest Scientist)
- Marc Paterno (0.5FTE)
- Patrick Gartung (1.0FTE)
- Elizabeth Sexton-Kennedy (0.5FTE)
- William Tanenbaum (1.0FTE)
- Eric Vaandering (0.2FTE)

Change control:
Scope and schedule changes in the software area are dedicated by the international CMS offline project coordinator in consultation with the level 2 managers for offline. The offline manager for framework is Elizabeth Sexton-Kennedy. The department head for CD-CMS will approve changes in the scope and schedule of physics support.

Risk Assessment:

This activity relies on specialized skills from dedicated developers and replacement and retraining is long process if someone is lost.

1. Failure to deliver software releases during data taking will have a major impact on the physics potential of CMS.